

REMARKS

The specification at pages 28, 36, 38 and 108 has been amended as requested by the Examiner to correct certain informalities in the various chemical formulae described therein. Withdrawal of the objection is respectfully requested.

Claims 1, 2, 5, 7, 9 and 10 are rejected, and claims 3, 4, 6, 8 and 11-25 are withdrawn from consideration as being directed to a non-elected invention.

Review and reconsideration on the merits are requested.

Claims 1, 2, 5, 7, 9 and 10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,444,148 to Adelman or JP 5-238988 to Inomata et al. (JP '988) each individually in view of U.S. Patent No. 5,986,150 to Araki et al.

Each of Adelman and JP '988 was cited as disclosing perfluorinated tertiary alcohol-containing monomers, differing from the claimed fluorine-containing ethylenic monomer having hydroxyl in that the carbon atom at the 3-position (relative to the double bond) is unsubstituted, whereas, in the elected species where $a=1$, Rf^3 is a fluorine-containing alkylene group having 1 to 40 carbon atoms or a fluorine-containing alkylene group having ether bond which has 1 to 100 carbon atoms. The Examiner characterized the compounds disclosed in both Adelman and JP '988 as being "monomers carrying a protonated or fluorinated monomeric moiety to be coupled with a perfluorinated tertiary alcohol group".

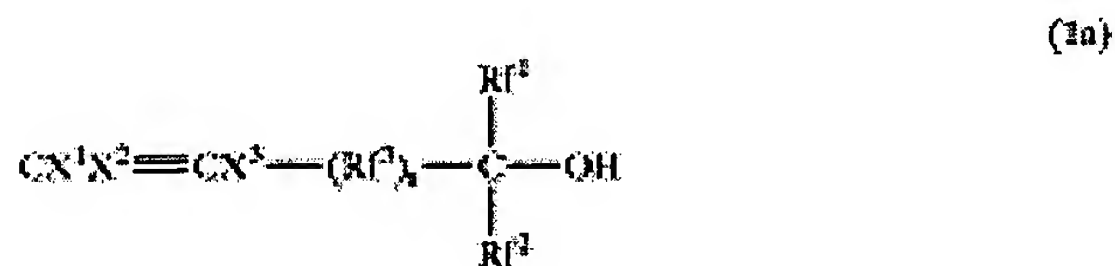
Araki et al. was cited as teaching that monomeric moieties such as $CH_2=CH-Y-$ and $CH_2=CF-Y-$ are functionally equivalent and interchangeable in the course of making fluorinated monomers carrying a perfluorinated tertiary alcohol group (where the linking group Y can be

either fluorinated or non-fluorinated). In this regard, the Examiner cited to column 7, lines 36-49; column 6, lines 20-32; column 13, line 30-column 15, line 55 where R in vinyl can be H or F, and Y can be alkyl, fluorinated alkyl or an alkoxy analogue group. Functional copolymers with both types of monomeric moieties are said to be useful for providing excellent affinity with other heat-resisting thermoplastic resins, citing column 1, lines 15-30.

Because all of the references are said to involve preparing similar functional fluoropolymers having the same type of hydroxyl group, the reason for rejection was that it would have been obvious to synthetically modify the moieties $\text{CH}_2=\text{CH}-\text{CH}_2-$ and $\text{CH}_2=\text{CH}-(\text{CH}_2)_n-$ in the monomers of Adelman or JP '988 by replacing with a moiety $\text{CH}_2=\text{CF}-\text{Rf}-$ as taught by Araki et al., with the expectation of obtaining functional copolymers having good affinity with other heat-resisting thermal plastic resins.

Applicants traverse, and respectfully request the Examiner to reconsider for the following reasons.

The present invention is directed to a fluorine-containing ethylenic monomer having hydroxyl group represented by formula (1a).



wherein X^1 and X^2 are the same or different and each is H or F; X^3 is H, F, Cl or CF_3 (at least one of X^1 , X^2 and X^3 is H and X^1 , X^2 and X^3 are not H at the same time); Rf^1 and Rf^2 are the

same or different and each is a perfluoroalkyl group; Rf^3 is a fluorine-containing alkylene group or a fluorine-containing alkylene group having ether bond; and a is 0 or 1.

The elected Species is Species (2), where $a = 1$, $X^1=X^2=H$; and $X^3=F$.

As discussed at page 1, lines 5-8 of the specification, the present invention relates to a novel fluorine-containing ethylenic monomer which has hydroxyl group or fluoroalkyl carbonyl group, and possesses good polymerizability, particularly radical polymerizability. As discussed at page 1, lines 15-20 of the specification, the fluorine-containing ethylenic monomer having hydroxyl of the present invention can be polymerized alone and can also be polymerized with other monomers, particularly fluorine-containing ethylenic monomers having no hydroxyl. Thus, hydroxyl having high acidity can be introduced into a fluorine-containing polymer.

Moreover, as discussed at page 2, lines 6-12 of the specification, as compared with conventional fluorine-containing polymers having hydroxyl and fluorine-containing polymers having other functional groups, in accordance with the invention, transparency (particularly transparency in vacuum ultraviolet region) and low refractive index can be maintained or improved while also enhancing affinity for insolubility in an aqueous medium, particularly an aqueous alkaline medium.

Turning to the cited prior art, the only passage in Araki et al. related to a perfluorinated tertiary alkyl group is the hemi-acetal compound of JP-A-143888/1975 at column 7, lines 36-49. However, this is not a compound of Araki et al. This is because the fluorine-containing olefin of Araki et al. (claim 1) has X^2 being a primary alcohol group or an epoxide-containing moiety. There is no "perfluorinated tertiary alcohol group" which could be combined with the monomeric

moieties $\text{CH}_2=\text{CH}-\text{Y}-$ or $\text{CH}_2=\text{CF}-\text{Y}-$ of Araki et al. where Y is fluorinated. In other words, there is no disclosure linking such fluorinated moieties with the hemi-acetal compound of JP-A-143888/1975 disclosed at column 7 of Araki et al.

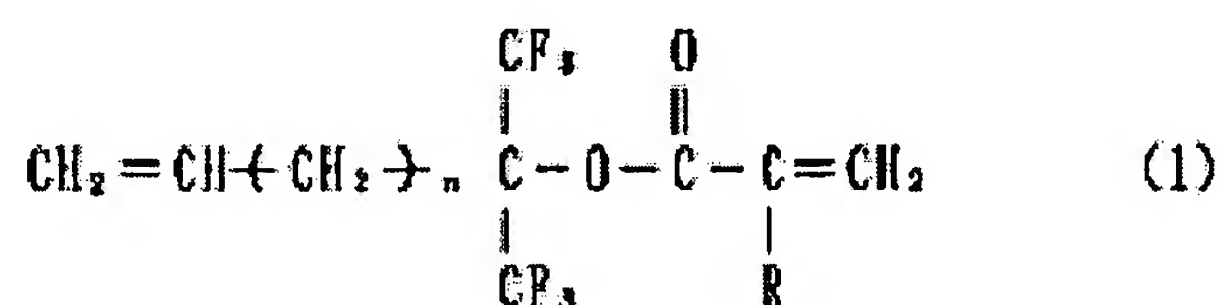
Thus, Applicants respectfully dispute the Examiner's position that Araki et al. teaches related monomers having a fluorine-containing alkaline group at the 3-position corresponding to Rf^3 of present claim 1.

Further thereto, Araki et al. did not recognize the advantage of combining $\text{CH}_2=\text{CF}-\text{Y}-$ with a fluorinated tertiary alcohol which confirms the unobviousness of the present invention. In this regard, even though Araki et al. discloses the monomer having a fluorinated tertiary alcohol of JP-A-143888/1975 as an example of the conventional art needing improvement, Araki et al. claims no more than fluorine-containing olefins having either a primary alcohol group or an epoxide group. If the connection were so easy to make, then Araki et al. would surely have described and claimed the combination of $\text{CH}_2=\text{CF}-\text{Y}-$ with a perfluorinated tertiary alcohol, but they did not.

The polyfluorinated tertiary alcohol monomer having $\text{CH}_2=\text{CH}-\text{CH}_2-$ unit according to Adelman et al. is copolymerized to prepare a copolymer having enhanced compatibility with acrylonitrile and dyeability by the presence of fluoroalcohol, but not by the presence of a $\text{CH}=\text{CF}-$ unit. Without first consulting the disclosure in the present specification, Applicants cannot understand how one skilled in the art could select the $\text{CH}_2=\text{CF}-\text{Y}-$ of Araki et al. which is described in the BACKGROUND ART. There is no motivation to make such a modification

from the viewpoint of the difference in objectives, or from the teaching of the prior art, or based on the knowledge of a skilled artisan.

The objective of Inomata et al. (JP '988) is to provide a novel fluorine-containing organic compound represented by formula (1) reproduced below and having, in one molecule, acryloxy or methacryloxy, vinyl and trifluoromethyl.



The polyfluorinated tertiary alcohol represented by formula (2) having a $\text{CH}_2=\text{CH}-$ unit, concrete examples thereof including [CHEM 5] or [CHEM 6] page 3, left-hand column of JP '988), is a reactant for introducing trifluoromethyl group to the novel non-alcohol compound (1). Therefore, Inomata et al. does not teach a polyfluorinated tertiary alcohol monomer for providing a fluorine-containing polymer which has hydroxyl in accordance with the present invention and is obtained by polymerization of such monomer, but rather is a reactant for introducing the trifluoromethyl group. Without first consulting the disclosure in the present specification, Applicants cannot understand how one skilled in the art could select the $\text{CH}_2\text{-CF-Y-}$ of Araki et al. which is described in the BACKGROUND ART. As above with respect to Adelman et al., there is no motivation to make such a modification from the viewpoint of difference of objectives, or from the teaching of the prior art, or based on the knowledge of a skilled artisan.

That is, it is respectfully submitted that one of ordinary skill in the art could never arrive at the claimed invention based on the combination of Adelman et al. or JP '988 each in view of Araki et al., without first improperly consulting Applicants' specification.


For the above reasons, it is respectfully submitted that the present claims are patentable over the cited prior art, and withdrawal of the foregoing rejection is respectfully requested.

Withdrawal of all rejections and allowance of claims 1-10 (Group I) is earnestly solicited.

In the event that the Examiner believes that it may be helpful to advance the prosecution of this application, the Examiner is invited to contact the undersigned at the local Washington, D.C. telephone number indicated below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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